



PRODUCT SPECIFICATION SHEET

Diagnostic Stuart's Urea Broth Base (Urea Broth Base) (DM284)

Intended Use

Diagnostic Stuart's Urea Broth Base (Urea Broth Base) (DM284) is recommended for identification of bacteria on the basis of urea utilization, especially for the differentiation of *Proteus*, *Salmonella* and *Shigella* species.

Product Summary and Explanation

Rustigian and Stuart developed Urea Broth.⁽¹⁾ It may be used for the identification of bacteria on the basis of urea utilization⁽²⁾ and it is particularly recommended for the differentiation of members of the genus *Proteus* from those of *Salmonella* and *Shigella* in the diagnosis of enteric infections.^(3, 4) Gram-negative enteric bacilli are unable to utilize urea because of less nutrients and high buffering capacity of the medium. Urea Broth becomes alkaline as the utilization of urea by the organisms liberates ammonia during the incubation, indicated by pink red colour. All urea test media rely on the alkalinity formation and so they are not specific for urease testing. The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids results in false-positive reaction. The medium is positive for *Proteus*, *Morganella morganii* subsp. *morganii*, *Providencia rettgeri*, and a few *Providencia stuartii* strains with the reclassification of the members of the *Proteeae*.

Principles of the Procedure

Diagnostic Stuart's Urea Broth Base contains monopotassium phosphate and dipotassium phosphate which provides high buffering capacity to the medium, while yeast extract supplies B-complex vitamins. Phenol red acts as a pH indicator

Formula / Liter

Ingredients	Gms / Litre
Monopotassium phosphate	9.10
Dipotassium phosphate	9.50
Yeast extract	0.10
Phenol red	0.01
Final pH: 6.8 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT, mainly irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 18.71 g of the medium in 950 of distilled water.
2. Heat if necessary to dissolve the medium completely.
3. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.
4. Cool to 55°C. Aseptically add 50 ml of sterile 40% Urea solution (MS031).
5. Mix well and distribute in 10 ml amounts into sterile tubes.





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Quality Control Specifications

Dehydrated Appearance	Light yellow to light pink homogeneous free flowing powder
Prepared Medium	Yellowish orange coloured clear solution in tubes
Reaction of 1.87gm in 95ml distilled water	pH 6.8 \pm 0.2 at 25°C
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed on addition of sterile 40% Urea solution (MS031) after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved	
		Inoculum (CFU)	Growth
1.	<i>Enterobacter aerogenes</i> ATCC 13048	50-100	negative reaction, no change
2.	<i>Escherichia coli</i> ATCC 25922	50-100	negative reaction, no change
3.	<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	positive reaction, cerise colour
4.	<i>Proteus vulgaris</i> ATCC 13315	50-100	negative reaction, no change
5.	<i>Salmonella Typhimurium</i> ATCC 14028	50-100	negative reaction, no change
6.	<i>Escherichia coli</i> ATCC 8739	50-100	negative reaction, no change
7.	<i>Klebsiella pneumoniae</i> ATCC 10031	50-100	positive reaction, cerise colour
8.	<i>Escherichia coli</i> NCTC 9002	50-100	negative reaction, no change
9.	<i>Proteus mirabilis</i> ATCC 25933	50-100	positive reaction, cerise colour

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Refer to appropriate references for standard test procedures.^(1,2)

Results

Growth is evident in the form of isolated colonies and/or a confluent lawn on the surface of the agar medium or the appearance of turbidity in the broth medium. Refer to appropriate references and test procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 10-30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.





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Expiration

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Limitations of the Procedure

1. Prolonged incubation may cause alkaline reaction in the medium.
2. A medium without urea serves as negative control to rule out false positive results.
3. Also, all urea test media rely on the alkalinity formation and so they are not specific for determining the absolute rate of urease activity.⁽⁴⁾
4. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Diagnostic Stuart's Urea Broth Base (Urea Broth Base)

Product Code : DM284

Available Pack sizes : 100gm / 500gm

References

1. Rustigian and Stuart, 1941, Proc. Soc. Exp. Biol. Med., 47:108.
2. Finegold and Baron, 1986, Bailey and Scotts Diagnostic Microbiology, 7th ed., The C.V. Mosby Co., St. Louis.
3. Christensen, 1946, J. Bact., 52:461.
4. MacFaddin J. F., 2000, Biochemical Tests for Identification of Medical Bacteria, 3rd Ed., Williams and Wilkins, Baltimore. Md.

Further Information

For further information please contact your local MICROMASTER Representative.



MICROMASTER LABORATORIES PRIVATE LIMITED

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Unit 38/39, Kalpataru Industrial Estate,
Off G.B. Road, Near 'R-Mall' , Thane (W) - 400607. M.S. INDIA.
Ph: +91-22-25895505, 4760, 4681. Cell: 9320126789.

Email: micromaster@micromasterlab.com
sales@micromasterlab.com

Prepared By	Checked By	Approved By
 01.01.2018	 01.01.2018	 01.01.2018
Microbiologist	Head Quality Control	Head Quality Assurance





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